UNITED STATES NAVAL OBSERVATORY

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POSITIONS, AREAS, AND COUNTS OF SUNSPOTS SEPTEMBER-OCTOBER-NOVEMBER-DECEMBER, 1952

By Winifred Sawtell

These results are based upon measurements made at the Naval Observatory on plates secured either there or at the Mt. Wilson Observatory. The symbols used for the entries in the successive columns are as follows:

U.T., the epoch of observation in Universal Time.
No., the identifying number of the group assigned by Mt. Wilson.
Δl, the heliographic difference in longitude from the central meridian, measured positive to the west.
φ, the heliographic latitude, measured positive to the north.
ρ, the heliocentric angular distance from the line joining the centers of the Earth and Sun.
A, the true area of the umbra plus penumbra, expressed in millionths of the visible hemisphere.
s, the number of spots.

An asterisk means that no Mt. Wilson number was assigned. Plates secured at the Naval Observatory are indicated by N, and those at Mt. Wilson by M. The plate quality, which follows, is indicated by:

1, Poor; 2, Fair; 3, Good; 4, Very Good; 5, Excellent.

The following five quantities are listed successively at the end of each day, and give for that day:

1. The total number of groups, g.
2. The longitude of the central meridian, L_0.
3. The latitude of the center of the disc, B_0.
4. The total value of A.
5. The total value of s.

The mean daily area and the mean relative sunspot number, $r=10g+s$ are given at the end of the month.

These results are a continuation of those published in the *Monthly Weather Review* from February 1, 1927 to December 31, 1947.

SEPTEMBER

U.T.	No.	Δλ	φ	ρ	A	s
		°	°	°		
1.699	11019	−36	−14	43	36	2
N–4	11017	−10	+ 3	11	24	6
	11017	− 8	+ 3	9	12	2
	11017	− 7	+ 5	8	48	10
	11017	− 6	+ 5	6	6	1
	11017	− 3	+ 4	5	182	9
	11015	− 7	− 3	13	12	3
	11015	− 7	− 6	16	12	4
	11015	− 6	− 7	16	24	8
	11015	− 6	− 5	14	97	6
	11015	− 4	− 3	11	48	3
	11015	− 3	− 3	11	6	2
	11015	− 1	− 3	11	339	8
	11015	+ 2	− 5	13	12	1
	11016	− 6	+ 3	7	6	1
	11016	− 4	+ 2	7	6	1
	11016	− 3	+ 2	7	6	2
	11016	− 1	+ 3	6	6	2
	11020	+50	−15	54	12	2
	11020	+55	−14	58	24	4
	11005	+61	−16	66	242	1
	(6)	(298)	(+7)		1160	78
2.644	(*)	−37	+19	38	12	3
N–4	11019	−24	−13	32	6	2
	11019	−22	−12	29	6	1
	11021	− 8	+25	20	12	2
	11017	+ 3	+ 3	6	12	2
	11017	+ 5	+ 6	6	48	7
	11017	+ 5	+ 5	6	12	2
	11017	+ 9	+ 6	9	12	4
	11017	+ 9	+ 4	10	121	6
	11017	+12	+ 7	12	6	1
	11016	+ 4	+ 1	8	6	2
	11016	+ 6	0	9	6	5
	11016	+10	+ 2	12	12	4
	11015	+ 6	− 7	16	6	5
	11015	+ 6	− 5	14	12	1
	11015	+ 7	− 4	13	61	7
	11015	+ 8	− 3	13	48	8
	11015	+ 8	− 7	17	48	4
	11015	+10	− 7	18	6	1
	11015	+12	− 4	17	364	8
	11020	+69	−13	71	48	3
	11005	+75	−15	76	291	1
	(8)	(286)	(+7)		1155	79
3.656	11019	−14	−16	27	12	2
N–3	11022	+ 3	−13	22	12	1
	11017	+17	+ 3	18	12	4
	11017	+18	+ 7	18	12	1
	11017	+19	+ 5	20	36	4
	11017	+21	+ 4	21	24	2
	11017	+23	+ 3	24	48	3
	11015	+18	− 3	21	12	1
	11015	+19	− 3	22	12	1
	11015	+20	− 8	26	24	3
	11015	+21	− 5	25	12	2
	11015	+23	− 6	27	73	6
	11015	+25	− 4	28	303	5
	11015	+26	− 3	29	24	2
	11020	+78	−12	80	145	2
	(5)	(272)	(+7)		761	39
4.645	11024	−79	− 7	81	12	1
N–3	11023	−31	− 8	35	12	1
	11017	+30	+ 2	31	12	2
	11017	+37	+ 3	37	48	2
	11015	+35	− 6	38	6	1
	11015	+36	− 6	38	24	4
	11015	+39	− 5	41	36	3
	11015	+40	− 4	42	339	1
	(4)	(259)	(+7)		489	15
5.643	11024	−67	− 7	68	12	1
N–3	11024	−66	− 9	67	24	2
	11024	−64	− 8	65	48	5
	11023	−17	− 8	23	12	2
	11017	+50	+ 3	50	48	2
	11015	+51	− 5	52	36	3
	11015	+53	− 4	55	339	1
	(4)	(246)	(+7)		519	16
6.729	11024	−48	− 8	50	24	2
N–2	11023	− 3	− 8	17	6	1
	(*)	+15	+ 9	16	6	1
	(*)	+45	+12	45	6	1
	11017	+65	+ 3	65	12	2
	11017	+65	+ 2	65	24	2
	11015	+66	− 6	67	24	1
	11015	+69	− 4	70	388	2
	(6)	(232)	(+7)		490	12
7.660	11024	−37	− 9	40	24	3
M–4	11024	−34	− 8	37	12	4
	(*)	−29	+19	32	24	4
	11025	− 7	− 6	16	6	1
	11017	+78	+ 4	79	12	1
	11015	+79	− 5	80	242	1
	(5)	(219)	(+7)		320	14
8.656	11026	−45	− 3	46	24	2

SEPTEMBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
N–2	(*)	–16	– 7	21	12	1
	(2)	(206)	(+7)		36	3
9.662	11028	–11	– 9	20	12	2
N–3	11027	– 4	+15	9	6	1
	(2)	(193)	(+7)		18	3
10.649	11027	+13	+15	16	12	2
N–3						
	(1)	(180)	(+7)		12	2
11.648	(*)	–59	+19	59	24	1
N–3						
	(1)	(167)	(+7)		24	1
12.647	(*)	– 4	+ 3	7	12	1
N–2						
	(1)	(154)	(+7)		12	1
13.649					0	0
N–3						
	(0)	(140)	(+7)		0	0
14.642					0	0
N–3						
	(0)	(127)	(+7)		0	0
15.616	11029	–12	+17	16	6	3
M–4	11029	–11	+16	15	6	4
	11029	–10	+16	14	6	1
	(*)	+45	– 5	47	12	3
	(2)	(114)	(+7)		30	11
16.644	11031	–85	+15	85	145	2
N–3	11030	–80	+12	81	145	2
	(2)	(101)	(+7)		290	4
17.642	11031	–71	+14	72	170	4
N–3	11031	–67	+13	67	73	2
	11030	–66	+12	66	97	3
	(2)	(88)	(+7)		340	9
18.649	11033	–79	–13	80	97	1
N–3	11031	–57	+14	57	36	4
	11031	–54	+15	54	6	1
	11031	–53	+13	53	61	3
	11030	–52	+12	52	73	6
	(3)	(74)	(+7)		273	15
19.787	11033	–62	–13	66	97	1
N–1	11031	–38	+13	38	48	1
	11030	–38	+11	38	48	1
	(3)	(59)	(+7)		193	3
20.663	11034	–88	+ 4	88	194	1
N–4	11033	–51	–14	55	85	3
	11030	–25	+10	25	36	5
	(3)	(48)	(+7)		315	9
21.672	11034	–79	+ 7	79	48	4
N–2	11034	–75	+ 4	75	485	3
	11033	–37	–14	42	48	3
	11033	–33	–13	39	24	1
	11031	–12	+11	13	24	1
	11030	–11	+10	11	24	3
	(4)	(34)	(+7)		653	15
22.603	11034	–67	+ 5	67	61	3
M–2	11034	–66	+ 3	66	12	2
	11034	–64	+ 3	64	16	3
	11034	–62	+ 3	62	291	9
	11033	–24	–15	33	48	10
	11030	0	+10	4	6	7
	(3)	(22)	(+7)		434	34
23.653	11035	–70	– 6	71	218	3
N–3	11034	–53	+ 4	54	48	4
	11034	–49	+ 3	49	48	3
	11034	–48	+ 3	48	339	5
	11033	–11	–15	25	36	2
	11036	– 6	+ 5	7	12	2
	11030	+15	+11	17	12	2
	(5)	(8)	(+7)		713	21
24.640	11035	–55	– 5	56	194	3
N–2	11034	–36	+ 4	37	24	3
	11034	–36	+ 3	35	97	5
	11034	–35	+ 4	34	145	4
	11034	–34	+ 2	34	6	1
	11034	–33	+ 3	33	73	2
	11033	+ 3	–16	24	32	2
	(3)	(355)	(+7)		571	20
25.660	11035	–41	– 6	43	194	1
N–3	11034	–24	+ 3	25	16	3

SEPTEMBER OCTOBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	11034	−23	+ 3	23	48	6
	11034	−23	+ 2	24	48	3
	11034	−22	+ 3	23	97	6
	11034	−21	+ 3	22	73	4
	11033	+16	−16	28	32	1
	(3)	(342)	(+7)		508	24
26.658	11035	−27	− 6	30	182	1
N–2	11034	− 9	+ 3	10	73	1
	11034	− 8	+ 3	9	6	1
	11034	− 8	+ 3	9	133	5
	11034	− 8	+ 2	10	24	2
	11034	− 7	+ 2	9	73	4
	11033	+29	−17	37	12	1
	(3)	(329)	(+7)		503	15
27.647	11035	−15	− 6	20	182	3
N–3	11034	+ 3	+ 2	7	48	5
	11034	+ 4	+ 3	6	121	7
	11034	+ 5	+ 1	8	32	5
	11033	+42	−17	48	32	3
	(3)	(316)	(+7)		415	23
28.749	11035	+ 2	− 7	5	145	2
N–3	11037	+17	+17	20	6	1
	11034	+18	+ 4	18	16	1
	11034	+19	+ 4	20	73	3
	11034	+20	+ 2	21	24	4
	11033	+59	−15	63	12	1
	(4)	(301)	(+7)		276	12
29.684	11035	+13	− 6	19	194	1
N–3	11034	+32	+ 3	32	12	1
	11034	+33	+ 2	34	12	1
	11034	+36	+ 2	37	6	1
	11038	+39	−13	44	6	1
	11033	+69	−16	71	12	1
	(4)	(289)	(+7)		242	6
30.653	11039	−80	− 7	81	24	1
N–3	11035	+26	− 6	29	182	3
	(*)	+43	−29	55	12	1
	11034	+45	+ 2	45	24	3
	(4)	(276)	(+7)		242	8

Mean for 30 days
$A = 366$, $r = 41.7$

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
1.727	11035	+41	− 7	43	182	1
N–3	11035	+42	− 7	45	12	1
	11034	+52	+ 4	52	6	1
	(2)	(262)	(+7)		200	3
2.647	11041	−34	− 9	38	16	2
N–4	11041	−32	− 9	37	12	1
	11035	+52	− 7	54	133	1
	(2)	(250)	(+7)		161	4
3.642	(*)	−24	+ 2	25	12	1
N–4	11041	−21	−10	27	32	1
	11041	−18	− 9	24	6	1
	(*)	+12	+ 8	12	6	2
	11035	+67	− 7	68	97	1
	(4)	(236)	(+7)		153	6
4.676	11043	−82	+12	82	97	1
N–2	11043	−76	+11	76	242	1
	11041	− 6	−11	18	6	1
	11044	+ 4	− 9	17	32	1
	11044	+ 7	− 5	14	48	1
	(3)	(223)	(+7)		425	5
5.639	11043	−67	+13	67	6	2
M–5	11043	−67	+12	67	6	2
	11043	−66	+13	65	170	6
	11043	−61	+12	61	412	8
	11043	−59	+14	60	24	3
	(*)	−14	−27	36	24	2
	11044	+17	−10	23	16	4
	11044	+18	− 6	22	6	2
	11044	+20	− 6	24	12	5
	(3)	(210)	(+6)		676	34
6.653	11043	−54	+12	53	121	4
N–2	11043	−49	+11	49	339	2
	(*)	−36	+ 8	36	12	1
	11044	+32	−10	36	48	1
	11044	+36	− 6	39	36	1
	(3)	(197)	(+6)		556	9
7.615	11043	−40	+13	41	73	3
M–2	11043	−38	+11	38	6	1
	11043	−35	+ 8	35	12	3
	11043	−34	+10	34	339	2
	11043	−34	+12	34	12	1
	11043	−33	+13	34	12	1

OCTOBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	11044	+47	−11	50	12	1
	(2)	(184)	(+6)		466	12
8.640	11043	−28	+13	29	121	3
N–2	11043	−27	+14	28	24	2
	11043	−23	+12	24	364	2
	11044	+56	− 9	59	36	1
	(2)	(170)	(+6)		545	8
9.680	11043	−12	+13	14	12	4
M–5	11043	−12	+11	13	24	10
	11043	− 8	+11	9	339	8
	(1)	(157)	(+6)		375	22
10.617	11043	− 3	+13	8	6	1
M–5	11043	− 1	+14	8	12	1
	11043	− 1	+13	7	6	2
	11043	− 1	+12	6	12	7
	11043	+ 3	+11	6	291	10
	11045	+27	+11	27	6	1
	(2)	(144)	(+6)		333	22
11.621	11043	+11	+13	14	6	1
M–5	11043	+12	+14	15	6	1
	11043	+12	+13	14	6	5
	11043	+13	+12	15	6	3
	11043	+14	+14	17	6	6
	11043	+16	+ 8	16	6	2
	11043	+16	+12	18	267	8
	11043	+16	+15	18	6	1
	11043	+17	+13	19	6	1
	11043	+19	+13	21	6	2
	(1)	(131)	(+6)		321	30
12.738	11043	+27	+12	27	12	1
N–2	11043	+28	+11	28	16	1
	11043	+29	+10	29	12	2
	11043	+31	+11	31	170	2
	11043	+32	+ 9	32	121	1
	(1)	(116)	(+6)		331	7
13.643	11043	+43	+11	43	170	2
N–3	11043	+44	+ 9	44	145	2
	(1)	(104)	(+6)		315	4
14.624	11043	+56	+12	56	73	3
N–3	11043	+56	+11	56	85	2
	11043	+58	+ 9	58	109	2
	(1)	(92)	(+6)		267	7
15.631	11043	+69	+13	69	109	2
N–3	11043	+69	+12	69	48	1
	11043	+71	+11	71	97	2
	(1)	(78)	(+6)		254	5
16.637	11043	+80	+15	80	194	1
N–1						
	(1)	(65)	(+6)		194	1
17.626					0	0
N–3						
	(0)	(52)	(+6)		0	0
18.646					0	0
N–2						
	(0)	(38)	(+6)		0	0
19.737	11046	−78	+ 4	78	145	2
N–2	11046	−74	+ 2	74	218	4
	11046	−66	+ 4	66	48	1
	(1)	(24)	(+5)		411	7
20.629	11046	−67	+ 5	67	85	1
N–2	11046	−66	+ 3	66	158	3
	11046	−65	+ 1	66	85	1
	11046	−61	+ 3	62	24	2
	11046	−61	+ 2	62	48	1
	11046	−60	+ 3	61	121	2
	(1)	(12)	(+5)		521	10
21.633	11046	−56	+ 2	56	97	2
N–2	11046	−54	+ 5	55	48	1
	11046	−53	+ 3	54	412	4
	11046	−51	+ 1	52	61	1
	11046	−48	+ 3	49	194	1
	(1)	(359)	(+5)		812	9
22.647	11046	−43	+ 2	44	36	3
N–3	11046	−43	+ 1	44	32	3
	11046	−41	+ 2	42	24	3
	11046	−41	+ 3	42	24	2
	11046	−39	+ 3	40	194	8
	11046	−36	+ 2	37	242	6
	11046	−34	+ 3	34	194	1
	(1)	(346)	(+5)		746	26
23.650	11046	−28	+ 2	28	32	3
N–3	11046	−27	+ 3	27	170	8
	11046	−26	+ 2	26	97	1

OCTOBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	11046	−25	+ 3	26	24	2
	11046	−24	+ 4	24	73	5
	11046	−23	+ 2	24	145	7
	11046	−21	+ 3	22	158	1
	(*)	−19	+13	21	12	1
	(2)	(332)	(+5)		711	28
24.631	(*)	−27	+13	28	6	1
N–4	11046	−16	+ 2	17	97	4
	11046	−14	+ 3	15	158	6
	11046	−13	+ 2	13	36	4
	11046	−12	+ 2	12	48	2
	11046	−11	+ 4	11	48	4
	11046	− 8	+ 2	9	158	3
	11046	− 7	+ 3	7	170	1
	11047	− 5	+ 8	6	12	1
	11047	− 6	+ 7	7	12	1
	11047	− 3	+ 7	4	16	1
	(3)	(320)	(+5)		761	28
25.617	11049	−88	+14	88	73	1
N–3	11046	− 3	+ 1	5	48	2
	11046	− 3	+ 2	4	48	2
	11046	− 2	+ 3	3	97	4
	11046	− 1	+ 2	3	24	4
	11046	+ 1	+ 2	3	24	1
	11046	+ 2	+ 3	3	12	3
	11046	+ 4	+ 3	5	145	6
	11046	+ 5	+ 1	6	170	5
	11046	+ 6	+ 2	7	109	1
	11047	+ 4	+ 6	5	12	1
	11047	+ 5	+ 7	6	12	1
	11047	+ 7	+ 6	7	12	1
	(3)	(307)	(+5)		786	32
26.624	11049	−72	+14	72	24	2
M–4	11049	−70	+15	71	24	7
	11046	+12	+ 2	12	12	4
	11046	+12	+ 4	12	16	13
	11046	+13	+ 3	14	48	25
	11046	+14	+ 4	15	12	11
	11046	+14	+ 3	15	24	7
	11046	+16	+ 4	17	48	17
	11046	+16	+ 2	17	16	6
	11046	+18	+ 2	19	267	11
	11046	+20	+ 3	21	73	1
	11047	+19	+ 7	20	24	8
	11047	+21	+ 7	21	6	2
	(3)	(293)	(+5)		594	114

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
27.640	11049	−62	+15	62	48	1
N–2	11049	−57	+15	57	121	4
	11046	+26	+ 2	27	32	2
	11046	+27	+ 1	27	24	2
	11046	+27	+ 3	27	61	2
	11046	+30	+ 3	30	24	3
	11046	+31	+ 1	32	218	3
	11046	+33	+ 1	33	73	1
	(2)	(280)	(+5)		601	18
28.853	11049	−46	+15	47	73	2
N–2	11049	−41	+14	42	145	1
	11046	+44	+ 4	45	73	1
	11046	+44	+ 3	44	24	2
	11046	+47	+ 1	47	230	1
	11046	+48	+ 2	49	61	1
	(2)	(264)	(+5)		606	8
29.629	11049	−38	+14	39	6	3
N–4	11049	−37	+15	38	12	3
	11049	−36	+14	36	61	6
	11049	−35	+15	36	12	4
	11049	−32	+13	33	12	3
	11049	−31	+13	32	97	4
	11046	+54	+ 4	54	73	5
	11046	+57	+ 3	57	16	2
	11046	+58	+ 1	58	170	4
	11046	+59	+ 2	59	48	1
	(2)	(254)	(+5)		507	35
30.637	11049	−23	+13	25	48	2
N–3	11049	−18	+12	20	48	1
	11049	−17	+12	18	12	3
	11046	+73	0	73	194	1
	11046	+74	+ 2	74	48	2
	(2)	(240)	(+4)		350	9
31.632	11049	−13	+15	17	6	1
N–4	11049	−11	+15	16	6	6
	11049	− 8	+14	13	61	8
	11049	− 7	+11	10	12	4
	11049	− 6	+13	10	36	5
	11049	− 5	+12	9	24	1
	11049	− 4	+12	8	6	2
	11046	+88	+ 4	88	97	1
	(2)	(227)	(+4)		248	28

Mean for 31 days
$A = 427$, $r = 34.9$

NOVEMBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
1.697	(*)	−68	+17	68	12	2
M–2	11049	+ 4	+16	13	6	1
	11049	+ 5	+15	13	12	2
	11049	+ 6	+14	12	12	4
	11049	+ 7	+14	13	32	7
	11049	+ 8	+13	13	6	4
	11049	+ 8	+12	12	6	3
	11049	+11	+13	15	12	2
	(2)	(213)	(+4)		98	25
2.711	11049	+14	+15	18	12	1
M–2	11049	+15	+16	19	6	1
	11049	+18	+15	22	12	1
	11049	+19	+16	23	16	2
	11049	+22	+15	25	6	2
	11049	+23	+15	26	6	3
	11049	+24	+16	27	6	1
	(1)	(200)	(+4)		64	11
3.694	(*)	− 1	+24	21	6	1
M–3	11049	+27	+14	29	6	1
	11049	+31	+16	33	6	2
	11049	+31	+15	33	6	2
	(2)	(187)	(+4)		24	6
4.623	(*)	−24	+16	27	12	4
N–4	(*)	− 6	− 6	12	6	3
	(*)	+27	−18	35	6	1
	(*)	+28	−17	35	6	1
	(*)	+29	−16	35	6	1
	(*)	+29	−20	37	12	2
	(3)	(175)	(+4)		48	12
5.631	11050	−67	−14	69	24	1
N–4	11050	−62	−15	65	48	1
	(1)	(161)	(+4)		72	2
6.643	11050	−54	−13	57	6	1
N–5	11050	−53	−13	56	61	1
	11050	−52	−16	56	6	1
	11050	−49	−15	53	24	3
	11050	−47	−14	50	24	1
	11050	−47	−14	50	133	2
	(1)	(148)	(+4)		254	9
7.620	11050	−42	−13	46	6	1
N–5	11050	−41	−15	45	6	1
	11050	−40	−13	44	48	3
	11050	−39	−15	44	6	2
	11050	−36	−15	41	24	4
	11050	−35	−14	40	12	1
	11050	−34	−14	39	145	2
	11050	−34	−16	40	24	2
	11051	+ 6	+12	10	6	2
	11051	+ 8	+13	13	48	2
	11051	+ 9	+14	14	16	6
	11051	+12	+13	16	48	7
	11051	+13	+13	17	16	1
	(2)	(135)	(+4)		405	34
8.788	11050	−21	−14	27	12	1
N–1	11050	−18	−14	26	121	1
	11051	+24	+12	26	61	2
	11051	+25	+13	27	48	2
	11051	+29	+14	31	97	1
	(2)	(120)	(+3)		339	7
9.726	(*)	−39	+11	40	12	1
M–3	(*)	−38	+11	39	12	1
	(*)	−37	+12	38	12	1
	11050	− 5	−15	18	97	4
	11051	+38	+11	39	32	3
	11051	+39	+12	40	85	4
	11051	+40	+13	41	12	7
	11051	+41	+12	42	6	1
	11051	+42	+13	43	6	2
	11051	+43	+13	44	73	5
	(3)	(107)	(+3)		347	29
10.676	11050	− 6	−15	19	6	1
M–4	11050	− 7	−15	19	6	1
	11050	− 9	−14	19	85	2
	11051	+49	+13	50	6	3
	11051	+51	+13	52	32	7
	11051	+52	+14	53	24	3
	11051	+55	+15	56	16	1
	11051	+56	+15	57	64	1
	(2)	(95)	(+3)		239	19
11.806	11050	+24	−14	30	85	1
N–2	11051	+70	+13	70	73	1
	(2)	(80)	(+3)		158	2
12.630	11053	+ 9	−12	17	24	1
N–3	11050	+34	−14	38	73	1
	11052	+37	+ 3	37	6	1
	11052	+41	+ 3	41	6	1
	11051	+82	+13	82	97	2
	(4)	(69)	(+3)		206	6
13.640	11050	+45	−15	49	24	1
N–4	11050	+47	−14	50	54	4

NOVEMBER

U.T.	No.	Δλ	φ	ρ	A	s
		°	°	°		
	11052	+49	+ 4	50	6	3
	11052	+49	+ 3	49	48	3
	11052	+50	+ 4	50	16	2
	11052	+53	+ 2	53	16	3
	11052	+54	+ 3	54	48	4
	(2)	(56)	(+3)		212	20
14.638	11050	+60	−14	63	97	1
N−3	11052	+63	+ 4	63	24	1
	11052	+64	+ 5	64	36	2
	11052	+68	+ 3	68	85	1
	(2)	(43)	(+3)		242	5
16.690	11054	−75	+ 5	75	182	1
N−3	11054	−70	+ 6	70	85	3
	11054	−67	+ 4	67	145	2
	11054	−66	+ 5	66	339	1
	(1)	(16)	(+3)		751	7
17.638	11054	−64	+ 3	64	48	2
N−2	11054	−64	+ 4	64	24	1
	11054	−63	+ 5	63	194	3
	11054	−61	+ 2	61	24	2
	11054	−61	+ 5	61	24	1
	11054	−59	+ 3	59	12	1
	11054	−57	+ 6	58	97	3
	11054	−55	+ 5	55	36	1
	11054	−54	+ 4	54	109	2
	11054	−53	+ 5	53	412	1
	(1)	(3)	(+2)		980	17
18.655	11054	−48	+ 4	48	36	3
M−4	11054	−48	+ 3	48	16	5
	11054	−47	+ 5	47	145	4
	11054	−47	+ 4	47	24	7
	11054	−46	+ 2	47	12	6
	11054	−45	+ 5	45	16	3
	11054	−44	+ 6	45	73	2
	11054	−43	+ 4	43	16	2
	11054	−42	+ 6	43	36	6
	11054	−40	+ 5	40	73	6
	11054	−39	+ 6	40	24	2
	11054	−38	+ 4	38	61	3
	11054	−37	+ 2	37	6	1
	11054	−37	+ 4	37	291	5
	11055	−25	−18	33	12	3
	(2)	(350)	(+2)		841	58
19.698	11054	−34	+ 4	34	61	2
M−3	11054	−34	+ 5	34	121	2
	11054	−33	+ 3	33	36	6
	11054	−30	+ 4	30	12	4
	11054	−29	+ 5	29	170	7
	11054	−29	+ 7	30	12	1
	11054	−28	+ 3	28	16	2
	11054	−26	+ 5	26	12	3
	11054	−26	+ 7	27	48	9
	11054	−24	+ 4	24	73	3
	11054	−24	+ 5	24	133	4
	11054	−24	+ 6	25	36	5
	11054	−22	+ 4	22	242	2
	11056	−17	− 3	18	12	2
	(2)	(336)	(+2)		984	52
20.669	11054	−21	+ 4	21	48	5
M−3	11054	−20	+ 6	21	97	3
	11054	−18	+ 4	19	24	4
	11054	−18	+ 7	20	6	2
	11054	−17	+ 4	18	97	7
	11054	−17	+ 6	18	194	10
	11054	−15	+ 4	16	12	12
	11054	−15	+ 5	16	12	3
	11054	−14	+ 6	15	6	2
	11054	−14	+ 8	17	48	5
	11054	−14	+ 5	16	24	5
	11054	−13	+ 6	15	24	5
	11054	−12	+ 6	13	36	6
	11054	−12	+ 5	13	36	4
	11054	− 8	+ 5	9	291	4
	11054	− 7	+ 5	8	242	1
	(1)	(323)	(+2)		1197	78
22.801	11054	+ 8	+ 5	9	61	1
N−3	11054	+ 8	+ 3	8	6	2
	11054	+ 9	+ 6	11	16	1
	11054	+11	+ 4	11	85	3
	11054	+12	+ 6	13	194	3
	11054	+13	+ 6	13	12	1
	11054	+15	+ 5	15	6	1
	11054	+17	+ 5	18	48	3
	11054	+19	+ 5	20	776	3
	11054	+20	+ 7	21	16	1
	(1)	(295)	(+2)		1220	19
23.690	11054	+19	+ 3	19	48	1
N−2	11054	+21	+ 4	21	36	1
	11054	+22	+ 3	22	48	4
	11054	+22	+ 5	23	194	2
	11054	+24	+ 5	25	16	4
	11054	+26	+ 6	27	48	2
	11054	+28	+ 5	28	48	2
	11054	+31	+ 4	31	727	2
	(1)	(283)	(+2)		1165	18
24.623	11057	−43	−14	45	16	2
N−4	11057	−39	−13	42	24	2
	11054	+32	+ 4	32	12	2

NOVEMBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	11054	+33	+ 4	33	6	1
	11054	+34	+ 4	34	24	3
	11054	+34	+ 5	34	242	3
	11054	+35	+ 6	36	6	1
	11054	+37	+ 4	37	12	1
	11054	+39	+ 6	40	36	1
	11054	+40	+ 7	41	12	2
	11054	+40	+ 4	40	61	4
	11054	+42	+ 7	42	48	2
	11054	+43	+ 5	43	727	2
	(2)	(271)	(+2)		1226	26
25.667	11057	−25	−14	29	6	2
M–3	11057	−24	−16	29	6	1
	11054	+45	+ 6	45	6	2
	11054	+47	+ 6	47	194	8
	11054	+52	+ 5	52	6	2
	11054	+53	+ 5	53	6	3
	11054	+53	+ 3	53	12	6
	11054	+54	+ 6	55	48	5
	11054	+55	+ 5	55	48	1
	11054	+55	+ 4	55	73	4
	11054	+58	+ 5	58	776	4
	(2)	(257)	(+1)		1181	38
26.703	11054	+62	+ 6	62	145	4
M–3	11054	+63	+ 6	63	48	2
	11054	+64	+ 6	64	24	3
	11054	+67	+ 7	67	12	3
	11054	+68	+ 5	68	73	4
	11054	+68	+ 4	68	12	5
	11054	+71	+ 6	71	48	1
	11054	+72	+ 6	72	727	2
	(1)	(244)	(+1)		1089	24
27.722	11054	+75	+ 4	75	145	3
M–2	11054	+83	+ 4	83	145	1
	11054	+86	+ 4	86	48	1
	11054	+88	+ 4	88	727	1
	(1)	(230)	(+1)		1065	6
28.667	11059	+15	+ 5	17	12	1
M–1						
	(1)	(218)	(+1)		12	1
29.623	11060	+27	−15	32	12	2
N–2						
	(1)	(205)	(+1)		12	2
30.688	11061	−78	+ 3	78	145	1
N–3	(*)	+46	+ 6	48	16	1
	(2)	(191)	(+1)		161	2

Mean for 28 days
$A = 521$, $r = 36.3$

DECEMBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
1.628	11061	−70	+ 2	70	12	3
N–3	11061	−64	+ 4	64	121	2
	11060	+55	−15	56	16	2
	(2)	(178)	(+1)		149	7
2.722	11061	−49	+ 5	49	12	3
M–3	11061	−48	+ 4	48	85	3
	11061	−48	+ 6	49	12	3
	(1)	(164)	(+1)		109	9
3.713	11061	−36	+ 7	37	6	4
M–3	11061	−35	+ 4	36	48	2
	(1)	(151)	(+1)		54	6
4.712	11061	−25	+ 1	26	6	2
M–2	11061	−24	+ 6	25	6	1
	11061	−24	+ 4	25	16	3
	11061	−23	+ 3	24	48	2
	11061	−22	+ 1	22	12	5
	(1)	(138)	(0)		88	13
5.717	11062	−73	+11	73	12	1
M–3	11062	−73	+13	74	36	2
	11062	−73	+14	74	97	1
	11062	−72	+13	73	73	2
	11062	−67	+10	68	16	1
	11062	−67	+11	69	24	1
	11062	−66	+12	68	6	1
	11062	−66	+11	67	24	3
	11062	−61	+12	63	12	2
	11061	− 9	+ 4	11	16	3
	11061	− 8	+ 5	10	12	1
	11061	− 8	+ 6	11	12	2
	11061	− 7	+ 4	8	12	2
	11061	− 7	+ 3	7	48	1
	(2)	(125)	(0)		400	23
6.751	11062	−68	+ 8	68	6	2
N–3	11062	−62	+10	63	121	1
	11062	−59	+ 9	60	6	1
	11062	−58	+ 7	59	97	2
	11062	−56	+ 8	57	12	2
	11062	−55	+ 6	56	24	3
	11062	−54	+ 7	54	24	1
	11062	−53	+ 8	54	73	3
	11062	−51	+ 9	52	6	2
	11062	−48	+ 8	49	12	1
	11061	+ 4	+ 3	6	48	2
	11061	+ 4	+ 4	6	12	2
	11061	+ 7	+ 5	9	6	2
	(2)	(111)	(0)		447	24
8.733	11063	−40	+12	42	16	3
M–4	11063	−36	+12	38	6	1
	11063	−34	+12	37	73	7

DECEMBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	11062	−33	+11	35	24	6
	11062	−33	+13	36	73	8
	11062	−32	+12	34	12	6
	11062	−31	+11	33	48	10
	11062	−29	+12	32	6	3
	11062	−28	+ 8	30	6	2
	11062	−26	+ 7	28	6	4
	11062	−26	+ 9	28	48	13
	11062	−25	+13	29	6	5
	11062	−24	+11	27	85	18
	11062	−24	+13	28	61	9
	11061	+31	+ 4	32	6	2
	11061	+33	+ 4	33	16	4
	11061	+34	+ 5	34	12	3
	(3)	(85)	(0)		504	104
9.710 M–4	11063	−27	+12	30	16	5
	11063	−25	+13	28	6	3
	11063	−23	+12	27	12	4
	11063	−21	+12	25	48	3
	11062	−20	+13	24	61	13
	11062	−17	+11	21	24	13
	11062	−14	+ 9	17	6	6
	11062	−13	+12	18	6	4
	11062	−12	+10	17	36	5
	11062	−11	+10	16	73	7
	11062	−11	+12	17	48	8
	11061	+44	+ 4	45	6	2
	(3)	(72)	(0)		342	73
10.699 M–3	11063	−13	+12	18	16	4
	11063	− 8	+12	16	12	2
	11063	− 7	+12	15	24	6
	11062	− 6	+11	13	24	1
	11062	− 6	+12	14	16	5
	11062	− 5	+11	13	24	6
	11062	− 4	+10	12	12	5
	11062	− 2	+ 9	10	6	1
	11062	− 2	+11	12	6	2
	11062	+ 2	+11	12	97	3
	11062	+ 3	+12	13	24	2
	11061	+55	+ 4	55	6	2
	(3)	(59)	(0)		267	39
11.717 M–3	11064	−77	−12	77	133	2
	11063	+ 4	+11	13	12	3
	11063	+ 5	+ 9	12	24	3
	11062	+ 7	+ 9	13	24	2
	11062	+10	+ 9	15	16	2
	11062	+13	+ 9	17	24	3
	11062	+14	+11	19	12	2
	11062	+14	+ 9	18	61	5
	(3)	(46)	(−1)		306	22

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
12.606 N–1	11066	−75	+ 7	76	242	2
	11064	−74	−11	74	97	1
	11064	−65	− 9	65	145	1
	11063	+17	+11	21	6	1
	11063	+18	+ 8	21	24	1
	11062	+26	+ 8	27	85	1
	11062	+26	+10	28	12	1
	11062	+27	+12	30	12	1
	(4)	(34)	(−1)		623	9
13.701 M–3	11067	−83	− 7	83	194	2
	11066	−61	+ 5	62	388	3
	11064	−59	−13	59	97	10
	11064	−57	−12	57	12	5
	11064	−55	−11	56	6	4
	11064	−52	−11	53	6	2
	11064	−49	−11	50	12	5
	11064	−48	−11	49	73	8
	11063	+34	+ 9	36	6	2
	11063	+36	+ 9	38	6	5
	11063	+39	+ 9	40	6	2
	11062	+41	+ 8	42	48	3
	(5)	(20)	(−1)		854	51
14.681 N–2	11068	−75	− 8	75	485	2
	11068	−72	− 6	72	145	2
	11067	−68	− 7	68	145	1
	11066	−48	+ 7	49	436	3
	11066	−48	+ 6	49	48	1
	11064	−47	−11	48	73	1
	11064	−46	−10	47	16	1
	11064	−45	−11	46	48	1
	11064	−35	−10	36	12	1
	11064	−34	−10	35	145	3
	11062	+56	+ 7	57	48	2
	(5)	(7)	(−1)		1601	18
15.635 N–2	11068	−69	−10	69	24	3
	11068	−67	−12	67	97	1
	11068	−64	−11	64	73	2
	11068	−61	−10	61	242	2
	11067	−58	− 7	58	24	2
	11067	−57	− 7	57	24	2
	11067	−53	− 8	53	85	1
	11066	−37	+ 6	38	12	1
	11066	−37	+ 4	37	24	1
	11066	−36	+ 6	37	461	1
	11066	−36	+ 4	37	36	1
	11064	−33	−12	34	48	1
	11064	−31	−12	33	24	1
	11064	−22	−10	23	48	1
	11064	−20	−10	22	145	3
	11064	−20	−12	23	36	1

DECEMBER

U.T.	No.	Δl	φ	ρ	A	s
		°	°	°		
	11062	+67	+ 9	69	48	2
	(5)	(354)	(−1)		1451	26
16.630	11068	−56	−11	57	24	2
N−2	11068	−55	−10	55	48	1
	11068	−53	−11	54	61	1
	11068	−49	−11	50	97	2
	11068	−49	− 8	49	73	2
	11068	−48	− 9	48	291	2
	11067	−46	− 7	47	24	1
	11067	−45	− 7	46	24	1
	11067	−43	− 7	43	16	2
	11067	−39	− 8	39	97	1
	11066	−24	+ 5	25	36	1
	11066	−23	+ 7	25	485	1
	11064	−19	−12	22	48	2
	11064	− 9	−10	14	12	2
	11064	− 8	−10	13	48	1
	11064	− 7	− 8	11	16	1
	11064	− 6	− 9	10	12	2
	11064	− 5	−10	10	12	1
	11064	− 5	− 9	10	97	1
	11062	+78	+11	78	97	2
	(5)	(341)	(−1)		1618	29
17.628	11068	−39	− 9	40	24	1
N−1	11068	−37	− 8	37	12	1
	11068	−36	− 7	37	388	1
	11067	−29	− 6	30	24	1
	11067	−27	− 6	27	73	1
	11066	− 8	+ 8	13	412	1
	11064	+ 3	−10	9	24	1
	11064	+ 4	− 8	8	73	1
	11064	+ 5	−10	10	24	1
	11064	+ 8	− 9	11	48	1
	(4)	(328)	(−1)		1102	10
18.647	11068	−23	−10	25	12	2
N−2	11068	−21	− 9	22	242	1
	11067	−12	− 8	14	73	1
	11066	+ 4	+ 7	9	436	2
	11070	+16	− 8	18	24	2
	11070	+16	−10	18	24	1
	11070	+17	− 9	19	24	1
	11070	+18	− 8	19	24	1
	11070	+20	−10	22	48	2
	11070	+22	− 9	23	12	2
	11069	+73	+22	77	48	1
	(5)	(314)	(−1)		967	16
19.618	11068	− 9	−10	13	145	1
N−1	11067	0	− 8	7	73	1
	11066	+17	+ 7	20	339	1
	11070	+29	−10	31	61	1
	11070	+34	−11	35	24	1
	(4)	(302)	(−2)		642	5
21.754	11068	+18	−12	21	242	1
M−4	11066	+43	+ 8	45	16	4
	11066	+44	+ 7	45	364	4
	11070	+57	− 9	58	24	4
	11070	+58	−10	58	24	3
	11070	+59	−11	60	12	2
	(3)	(273)	(−2)		682	18
22.717	11068	+31	−11	32	242	1
M−3	11072	+44	− 7	45	12	2
	11066	+57	+ 7	58	315	2
	11070	+71	− 9	71	6	1
	(4)	(261)	(−2)		575	6
23.724	11068	+44	−12	45	267	6
M−3	11066	+70	+ 6	71	145	1
	(2)	(247)	(−2)		412	7
24.658	11068	+58	−10	60	194	1
N−1						
	(1)	(235)	(−2)		194	1
26.718	11073	+29	− 5	29	12	1
N−3	11073	+33	− 5	33	12	1
	(1)	(208)	(−2)		24	2
28.767	11074	−64	+ 1	64	12	2
N−1						
	(1)	(181)	(−3)		12	2
29.661	11075	−63	+12	65	12	1
M−2	11075	−60	+13	62	6	1
	11074	−51	+ 3	52	12	2
	11074	−49	+ 3	50	6	2
	(*)	−40	+21	46	16	1
	(3)	(169)	(−3)		52	7
30.609	11075	−56	+10	58	12	1
N−2	11075	−48	+10	50	24	1
	(1)	(157)	(−3)		36	2

Mean for 26 days
$A = 520$, $r = 48.8$

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